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ABSTRACT

These item specifications were developed as a part of the Arkansas "Minimum Performance Testing Program" (MPT). There is one item specification for each instructional objective included in the MPT. The purpose of an item specification is to provide an overview of the general content and format of test items used to measure an instructional objective. Specifically, each item contains: (1) an objective identification number; (2) grade level; (3) subject area; (4) goal identification; (5) skill description; (6) stimulus attributes; (7) response attributes; and (8) sample items. It is suggested that teachers may use these specifications in a variety of ways. Teachers may use them as a guide in the development of evaluation instruments to check student performance, inform paernts about what their child will face on the MPT, and familiarize their students with the MPT. Covered in this guide are items which test science concepts including: process skills; cells; heredity and change; body systems; classification and simple organisms; animals; plants; environment; earth history; matter and earth materials; earth processes; meterology; oceanography and water cycle; universe and astronomy; and energy and natural resources. (CW)

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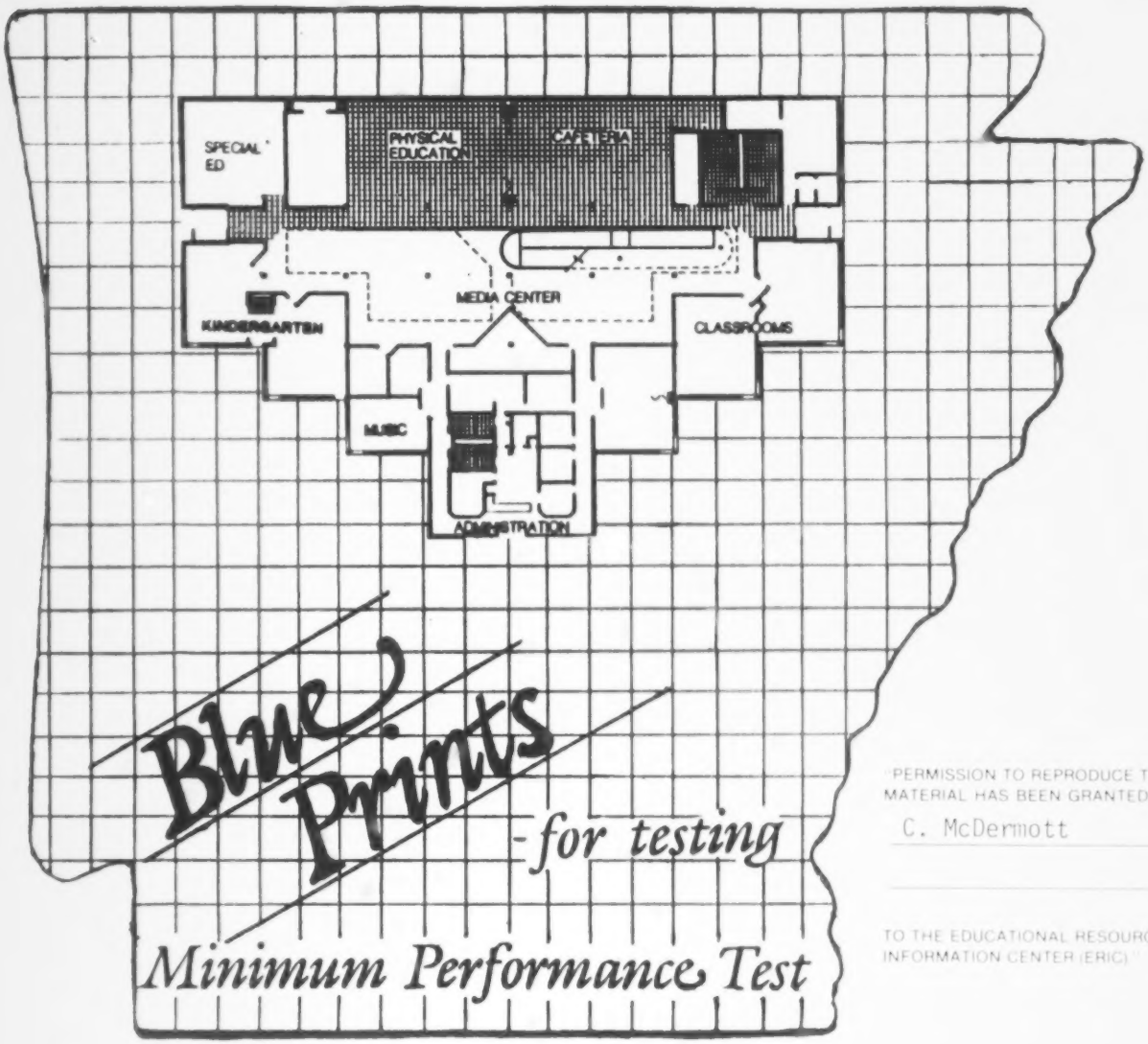

Blue Prints -for testing Minimum Performance Test

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Item Specifications

Science
Grade 8

SE051483

INTRODUCTION

These Item Specifications were developed by the Department of Education as part of the Arkansas Minimum Performance Testing Program (MPT). There is one Item Specification for each instructional objective included in the MPT. While all objectives are not necessarily tested every year, every objective included here may appear in the MPT.

The purpose of an Item Specification is to provide an overview of the general content and format of test items used to measure an instructional objective. Specifically, each Item Specification contains the following information:

* *Objective Identification Number*
* *Grade Level*
* *Subject Area*
* *Goal Identification*
* *Skill Description*
* *Stimulus Attributes (Format, Content, Directions)*
* *Response Attributes (Format, Content, Directions)*
* *Sample Item(s)*

The first five elements listed above are consistently labeled and defined to correspond with the Teachers' Guide and MPT materials. The Stimulus Attributes section contains information about the item stem (the question of incomplete statement that makes up the test question). Similarly, the Response Attributes section contains information about the correct answer and about possible incorrect answers. The Sample Item section provides examples of a test item or items which are similar to the items which may appear on the MPT.

These Item Specifications may be used in a variety of ways. Teachers may use them to guide them in the development of information evaluation instruments to determine whether or not students have mastered specific objectives. Teachers may also use these Item Specifications to inform parents about what their children will experience when they take the MPT. Teachers may also use these Item Specifications to familiarize students with what to expect on the MPT.

School administrators may used these Item Specifications when they communicate to the public about the MPT. The sample items may be useful in illustrating what mastery of an objective means.

It is important to understand that use of these Item Specifications does not in any way invalidate the MPT. None of the test items on these Item Specifications have appeared or will ever appear on the MPT. Using these Item Specifications in the classroom or as part of the instructional process is **NOT** teaching the test!

OBJECTIVE: 1.1

GRADE 7: SCIENCE **GOAL: PROCESS SKILLS**

SKILL: Recognize the steps of the scientific method in sequential order and identify these steps when presented in a problem (i.e., statement of problem, hypothesis, procedure, data collection and conclusion).

STIMULUS ATTRIBUTES:

A. Format a direct question asking for the identification of the correct sequence of the steps of the scientific method

B. Content the sequence of events as specified in the skill

RESPONSE ATTRIBUTES:

A. Format four words, phrases or four sets of words or phrases listed vertically from short to long

B. Options correct response: the word, phrase or set of words or phrases requested in the stimulus question
distractors: other words, phrases or sets of words or phrases relating to the steps in the scientific method

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SAMPLE ITEM:

1. **Which is the SECOND step in the scientific method of inquiry?**

   A procedure
   B conclusion
   *C hypothesis
   D data collection

OBJECTIVE: 2.1

GRADE 7: SCIENCE **GOAL: CELL**

SKILL: Select the definition for the following words and terms: cell, tissue, cell wall, nucleus, cytoplasm, protoplasm, cell membrane, vacuole, chloroplast, diffusion and osmosis.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence with an underlined word or term and requiring a definition to complete the sentence

Type 2 an incomplete sentence containing a definition and requiring a word or term to complete the sentence

B. Content

Type 1 words or terms from the skill list

Type 2 definition of word or term from the skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four definitional words or phrases listed vertically from short to long

Type 2 four words or terms listed vertically from short to long

B. Options

Type 1 correct response: the definition of the underlined word or term in the stimulus
distractors: definitions of other words or terms from the skill list

Type 2 correct response: the word or term matching the definition in the stimulus
distractors: other words or terms from the skill list

SAMPLE ITEM: *Type 1*

1. **Osmosis is a specific type of:**

A tissue movement.
B vacuole secretion.
•**C** diffusion of fluids through a membrane.
D cytoplasm movement.

SAMPLE ITEM: *Type 2*

2. **The diffusion of fluids through a membrane is:**

•**A** osmosis.
B cytoplasm.
C protoplasm.
D chloroplast.

OBJECTIVE: 2.3

GRADE 7: SCIENCE **GOAL: CELL**

SKILL: Select the statement which correctly distinguishes the differences between a plant and an animal cell.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence containing parts of a plant or animal cell and requiring distinction between a plant or animal cell

Type 2 an incomplete sentence or direct question requiring identification of a characteristic or a part of a plant or animal cell

Type 3 a direct question requiring the identification of a line drawing of a plant or animal cell

RESPONSE ATTRIBUTES:

A. Format

Type 1 four words or phrases listed vertically from short to long

Type 2 four words or phrases containing plant or animal cell parts or characteristics listed vertically from short to long

Type 3 four line drawings of plant and/or animal cells

B. OPTIONS

Type 1 correct response: the word or phrase requested in the stimulus sentence
distractors: other words or phrases related to the correct response

Type 2 correct response: the word or phrase requested in the stimulus sentence
distractors: other words or phrases containing plant or animal cell parts or characteristics

Type 3 correct response: the line drawing requested in the stimulus question
distractors: other line drawings related to the correct response

OBJECTIVE: 2.3 (cont.)

SAMPLE ITEM: ***Type 1***

1. **Chlorophyll is found in most:**

   *A plants.
   B animals.
   C minerals.
   D living things.

SAMPLE ITEM: ***Type 2***

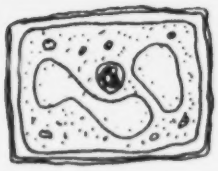
2. **What structures differentiate plant cells from animal cells?**

   A nuclei
   B arteries
   *C cell walls
   D cell membranes

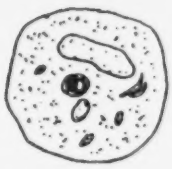
SAMPLE ITEM: ***Type 3***

3. **Which drawing represents a plant cell?**

A

*B 

C

D 

OBJECTIVE: 3.1

GRADE 7: SCIENCE **GOAL: HEREDITY AND CHANGE**

SKILL: Select the definition for the following words and terms: heredity, dominant, recessive, trait, genes, chromosomes, generation, mutation, natural selection, adaptation, extinction, fossils, evolution, hybrid, DNA, mitosis, meiosis and genetics.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence containing an underlined word or term and requiring a definition to complete the sentence

Type 2 an incomplete sentence or direct question containing a definition and requiring a term or word to complete the sentence

B. Content

Type 1 words, terms and definitions from the skill list

Type 2 definition of word or term from the skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four definitional phrases listed vertically from short to long

Type 2 four words or terms listed vertically from short to long

B. Options

Type 1 correct response: the definition of the underlined word in the stimulus sentence
distractors: definitions of other words or terms from the skill list

Type 2 correct response: the word or term requested in the stimulus sentence
distractors: other words or terms from the skill list

SAMPLE ITEM: *Type 1*

1. **Mitosis is:**

* **A** a form of cell division.
B a nucleic acid containing genetic information.
C a piece of DNA that codes for a particular trait.
D the passing of traits from one generation to another.

SAMPLE ITEM: *Type 2*

2. **Which is a form of cell division?**

A hybrid
B embryo
* **C** mitosis
D diffusion

OBJECTIVE: 4.1

GRADE 7: SCIENCE **GOAL: BODY SYSTEMS**

SKILL: Select the definition for the following words and terms: system, skeletal, muscular, circulatory, excretion, nervous, respiratory, digestion, integumentary, reproduction and endocrine.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence containing an underlined word or term and requiring a definition to complete the sentence

Type 2 an incomplete sentence or direct question with a definition and requiring a word or term to complete the sentence

B. Content stimulus word, term or definition from the skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four definitional phrases listed vertically from short to long

Type 2 four words or terms listed vertically from short to long

B. Options

Type 1 correct response: the definition for the underlined word in the stimulus sentence
distractors: other definitional phrases from the skill list

Type 2 correct response: the word or term requested in the stimulus sentence
distractors: other words or terms from the skill list

SAMPLE ITEM: *Type 1*

1. The endocrine system:

A controls breathing.
B holds the body together.
C contains arteries and veins.
• **D** produces hormones that regulate body activities.

SAMPLE ITEM: *Type 2*

1. Which system produces hormones and enzymes that regulate body activities?

A skeletal
• **B** endocrine
C circulatory
D respiratory

OBJECTIVE: 4.7

GRADE 7: SCIENCE **GOAL: BODY SYSTEMS**

SKILL: Identify the four major chambers of the heart.

STIMULUS ATTRIBUTES:

A. Format

Type 1 a direct question asking for the name of one of the four major chambers followed by an illustration of the heart

Type 2 an incomplete sentence or direct question such as: Which is one of the MAJOR heart chambers?

RESPONSE ATTRIBUTES:

A. Format

Type 1 four terms or four sets of terms listed vertically from short to long

Type 2 four terms listed vertically from short to long

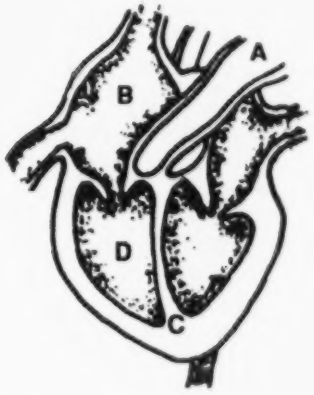
B. Options

Type 1 correct response: the term or set of terms requested in the stimulus question
distractors: other terms or sets of terms

Type 2 correct response: the term requested in the stimulus
distractors: other terms related to the correct response

SAMPLE ITEM: *Type 1*

1. Which is an upper chamber of a heart?



A aorta
• **B** atrium
C septum
D ventricle

SAMPLE ITEM: *Type 2*

2. Which is one of the MAJOR heart chambers?

A esophagus
B bronchi
C right humerus
• **D** left ventricle

OBJECTIVE: 4.11

GRADE 7: SCIENCE **GOAL: BODY SYSTEM**

SKILL: Identify from a list of words the major organs of the respiratory system (i.e., nose, mouth, pharynx, trachea, bronchial tubes, lungs, aveoli and diaphragm).

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence or a direct question such as: Which organ is (is NOT) in the respiratory system?

Type 2 a line drawing of the human body followed by a direct question such as: Which is the _____?

B. Content

Type 2 line drawing of the human body with parts of the respiratory system labeled (1,2,3,4)

C. Directions

Type 2 Refer to the drawing to answer question ( ).

RESPONSE ATTRIBUTES:

A. Format

Type 1 four words, sets of words or phrases listed vertically from short to long

Type 2 four lnumbers listed vertically.

B. Options

Type 1 correct response: the word, set of words or phrase requested in the stimulus question
distractors: other related words, sets of words or phrases related to the skill list or another body system

Type 2 correct resposne: the label requested in the stimulus question
distractors: other labels from the skill list

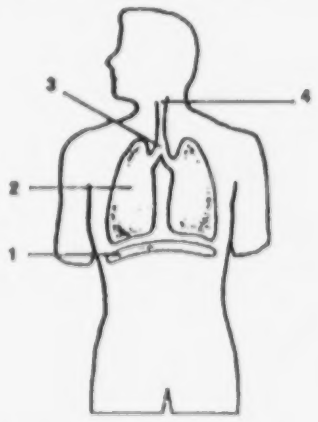
SAMPLE ITEMS: *Type 1*

1. **Which muscle helps pump air in and out of the lungs?**

   A heart
   B pharynx
   C stomach
   • **D** diaphragm

SAMPLE ITEM: *Type 2*

Refer to the drawing to answer question 2.



2. **Which is the trachea?**

   A 1
   B 2
   C 3
   • **D** 4

OBJECTIVE: 4.14

GRADE 7: SCIENCE **GOAL: BODY SYSTEMS**

SKILL: Identify from a list of the major organs of the digestive tract (i.e., mouth, esophagus, stomach, large intestine, small intestine).

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence or a direct question such as: Which is (is NOT) a MAJOR organ of the digestive tract?

Type 2 a line drawing of the human body followed by a direct question such as: Which is the ( )?

B. Content

Type 2 line drawing of the human body labeled (1,2,3,4)

C. Directions

Type 2 Refer to the drawing to answer question ( ).

RESPONSE ATTRIBUTES:

A. Format

Type 1 four words, sets of words or phrases listed vertically from short to long

Type 2 four labels listed vertically

B. Options

Type 1 correct response: the word, set of words or phrases requested in the stimulus question
distractors: other words, sets of words or phrases related to the skills list or another body system

Type 2 correct response: the label requested in the stimulus question
distractors: other labels from the skill list

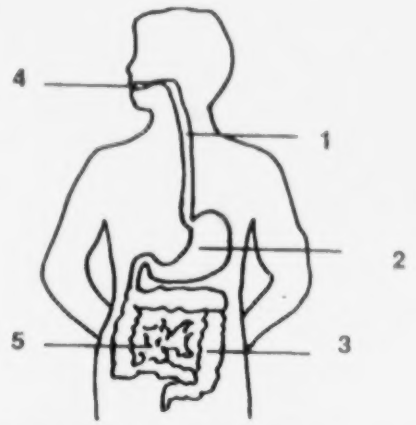
SAMPLE ITEM: *Type 1*

1. **Which is a MAJOR organ of the digestive tract?**

   A ulna
   B trachea
   C humerus
   * **D** esophagus

SAMPLE ITEM: *Type 2*

Refer to the drawing to answer question 2.



2. **Which is the large intestine?**

   A 1
   B 2
   * **C** 3
   D 5

OBJECTIVE: 4.17

GRADE 7: SCIENCE **GOAL: BODY SYSTEMS**

SKILL: Identify the five senses and the organs with which they are associated.

STIMULUS ATTRIBUTES:

A. Format

Type 1 a direct question such as: Which is (is NOT) a human sense?

Type 2 a direct question such as: The ( ) is associated with which human sense?

Type 3 a direct question such as: Which represents a CORRECTLY (INCORRECTLY) matched pair?

RESPONSE ATTRIBUTES:

A. Format

Type 1 four terms or phrases listed vertically from short to long

Type 2 four terms or phrases listed vertically from short to long

Type 3 four pairs of terms, each containing a body sense and body organ, listed vertically from short to long

B. Options

Type 1 correct response: the term or phrase requested in the stimulus question
distractors: other terms or phrases related to the correct response

Type 2 correct response: the term or phrase requested in the stimulus question
distractors: other terms or phrases related to the correct response

Type 3 correct response: the pair of terms requested in the stimulus question
distractors: other pairs of terms

SAMPLE ITEMS: *Type 1*

1. Which is a human sense?

A ear
B skin
C nose
•**D** touch

Type 2

2. The skin is directly associated with which human sense?

A taste
• **B** touch
C smell
D sight

Type 3

3. Which represents a CORRECTLY matched pair?

A taste - eye
B sight - nose
• **C** touch - skin
D smell - ear

OBJECTIVE: 5.2

GRADE 7: SCIENCE **GOAL: CLASSIFICATION AND SIMPLE ORGANISMS**

SKILL: Select from a list of statements the differences between plants and animals.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence such as: Reproduction is a characteristic of:

Type 2 a direct question such as: Which characteristic would apply only to a plant or (animal)?

Type 3 a statement requiring the selection of a set of characteristics of a plant or (animal)

RESPONSE ATTRIBUTES:

A. Format

Type 1 four words or phrases listed vertically from short to long

Type 2 four words or phrases listed vertically from short to long

Type 3 four sets of words or phrases listed vertically from short to long

B. Content

Type 1 words or phrases such as: plants, animals, both plants and animals, neither plants nor animals

Type 2 characteristics of plants and/or animals

C. Options

Type 1 correct response: the word or phrase requested in the stimulus sentence
distractors: other words or phrases related to the correct response

Type 2 correct response: the characteristic requested in the stimulus question
distractors: characteristics of plants (animals)

Type 3 correct response: the set of characteristics requested in the stimulus statement
distractors: sets of other characteristics

OBJECTIVE: 5.2 (cont.)

SAMPLE ITEM: ***Type 1***

1. **The ability to manufacture their own food is a characteristic of:**

   • **A** most plants.
   B most animals.
   C both plants and animals.
   D neither plants nor animals.

SAMPLE ITEM: ***Type 2***

2. **Which characteristic would apply ONLY to a plant?**

   A ingests its food
   B reproduces sexually
   • **C** manufactures its own food
   D moves from place to place to find food.

SAMPLE ITEM: ***Type 3***

3. **Which list contains characteristics of MOST animals?**

   A take in food, contain chlorophyll, move
   B make food, use oxygen, contain proteins
   C move, give off carbon dioxide, make own food
   • **D** take in food, use oxygen, reproduce sexually

OBJECTIVE: 5.4

GRADE 7: SCIENCE **GOAL: CLASSIFICATION AND SIMPLE ORGANISMS**

SKILL: Identify characteristics which distinguish living organisms from non-living organisms (i.e., reproduction, metabolism, growth and response to environment).

STIMULUS ATTRIBUTES:

A. Format

Type 1 a direct question such as: Which is (is NOT) a characteristic of a living organism?

Type 2 an incomplete sentence containing a term such as: Metabolism occurs in:

RESPONSE ATTRIBUTES:

A. Format

Type 1 four words or phrases listed vertically from short to long

Type 2 four words or phrases listed vertically from short to long

B. Options

Type 1 correct response: the characteristic requested in the stimulus question
distractors: other characteristics related to the correct response

Type 2 correct response: the word or phrase requested in the stimulus sentence
distractors: other related words or phrases

SAMPLE ITEM: *Type 1*

1. Which is NOT a characteristic of a living organism?

A requiring water
B growing from within
C responding to simuli
• **D** manufactures its own food

SAMPLE ITEM: *Type 2*

2. Metabolism occurs in:

A water.
B rocks.
• **C** living organisms.
D non-living organisms.

OBJECTIVE: 6.3

GRADE 7: SCIENCE **GOAL: ANIMALS**

SKILL: Identify characteristics of mammals (i.e., warm-blooded, hair and mammary glands).

STIMULUS ATTRIBUTES:

A. Format an incomplete sentence or a direct question such as: Which characteristic applies (does NOT apply) to mammals?

RESPONSE ATTRIBUTES:

A. Format four words or phrases listed vertically from short to long

B. Options correct response: the characteristic requested in the stimulus question
distractors: other words or phrases related to the correct response

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SAMPLE ITEM:

1. **Which characteristic applies ONLY to mammals?**

   A scales
   B lay eggs
   C backbone
   ***D** mammary glands

OBJECTIVE: 7.1

GRADE 7: SCIENCE **GOAL: PLANTS**

SKILL: Select the definition for the following words and terms: pollination, germination, angiosperm, gymnosperm, photosynthesis, monocots and dicots.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence containing a word or term and requiring a definition to complete the sentence

Type 2 an incomplete sentence containing a definition and requiring a word or term to complete the sentence

B. Content words, terms or definitions from the skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four definitional phrases listed vertically from short to long

Type 2 four words or terms listed vertically from short to long

B. Options

Type 1 correct response: the definition of the word or term in the stimulus sentence
distractors: definitional phrases for other words or terms from the skill list

Type 2 correct response: the word or term requested in the stimulus sentence
distractors: other words or terms from the skill list

SAMPLE ITEM: *Type 1*

1. **Monocots have:**

   •**A** one seed leaf.
   B no seed leaves.
   C two seed leaves.
   D more than two seed leaves.

SAMPLE ITEM: *Type 2*

2. **A plant with one seed leaf is a(n):**

   A dicot.
   •**B** monocot.
   C angiosperm.
   D gymnosperm.

OBJECTIVE: 8.1

GRADE 7: SCIENCE **GOAL: ENVIRONMENT**

SKILL: Select the definition of the following words and terms: population, food chain, ecology, biosphere, biome, community, habitat, ecosystem, adaptation, extinction, environment, predator, pollution, renewable, nonrenewable and conservation.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence containing a word or term requiring a definition to complete the sentence

Type 2 an incomplete sentence containing a definition and requiring a word or term to complete the sentence

B. Content words, terms, or definitions from the skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four definitional phrases listed vertically from short to long

Type 2 four words or terms listed vertically from short to long

B. Options

Type 1 correct response: the definiton of the word or term in the stimulus sentence
distractors: definitions or other words or terms from the skill list

Type 2 correct response: the word or term requested in the stimulus sentence
distractors: other words or terms from the skill list

SAMPLE ITEM: *Type 1*

1. **The biosphere is:**

* **A** the total region where life can exist.
B a large geographical area with characteristic life forms.
C the part of an ecosystem in which an organism lives.
D the study of the relationship between organisms and their environment.

SAMPLE ITEM: *Type 2*

2. **The total region where life can exist on earth is the:**

***A** biosphere.
B hemisphere.
C atmosphere.
D hydrosphere.

OBJECTIVE: 2.1

GRADE 8: SCIENCE **GOAL: EARTH HISTORY**

SKILL: Select the definitions for the following words and terms: plate tectonics, sea floor spreading, continental drift, superposition, geologic time, fossils, mutation, natural selection, evolution, extinction, dust cloud theory, rift zone and mid-ocean ridge.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence containing a term and requiring a definition

Type 2 an incomplete sentence containing a definition and requiring a term

B. Content term or definition from the objective skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four definitions for scientific terms, listed vertically from short to long

Type 2 four scientific terms listed vertically from short to long

B. Options

Type 1 correct response: the definition of the stimulus term
distractors: definitions of other scientific terms from the skill list

Type 2 correct response: the term required by the stimulus definition
distractors: other scientifc terms from the skill list or other related terms

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SAMPLE ITEM: *Type 1*

1. **The principle of superposition states that in a series of rock layers the:**

   *A oldest layer will be on the bottom of all the layers.
   B youngest layer will be on the bottom of all the layers.
   C youngest layer will be in the middle of the series of layers.
   D oldest layers will be found on the top of the series of layers.

SAMPLE ITEM: *Type 2*

2. **The scientific principle which states that in a series of undisturbed rock layers, the oldest layer will always be located on the bottom and the youngest layer on the top is:**

   A mutation.
   B geologic.
   C extinction.
   *D superposition.

OBJECTIVE: 3.1

GRADE 8: SCIENCE **GOAL: MATTER AND EARTH MATERIALS**

SKILL: Select definitions for the following words and terms: matter, atom, element, mass, compound, mixture, molecule, density, volume, ground water, stalactite, stalagmite, chemical property, physical property and mineral.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence containing an underlined term and requiring a definition

Type 2 an incomplete sentence containing a definition and requiring a term

B. Content term or definition from the objective skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four definitions of related scientific terms, listed vertically from short to long

Type 2 four scientific terms listed vertically from short to long

B. Options

Type 1 correct response: the definition of the stimulus scientific term
distractors: definitions of other scientific terms from the skill list

Type 2 correct response: the term requested in the stimulus question
distractors: other scientific terms from the skill list

SAMPLE ITEM: *Type 1*

1. **A mineral is defined as:**

   A a man-made rock material.
   B physical changes in the shape of an object.
   • **C** a solid, crystalline, naturally occuring inorganic substance that always has the same properties.
   D the compounds formed in a laboratory experiment.

SAMPLE ITEM: *Type 2*

2. **A chemical substance which occurs in nature is a(n):**

   A atom.
   B tissue.
   C nuclei.
   *D mineral.

OBJECTIVE: 3.2

GRADE 8: SCIENCE **GOAL: MATTER AND EARTH MATERIALS**

SKILL: Identify the main particles of the nucleus and energy shells for the atom (i.e., nucleus, proton, neutron and energy shell-electron).

STIMULUS ATTRIBUTES:

A. Format

Type 1 a direct question such as: Which drawing represents the atom?

Type 2 a direct question such as: Which is (is NOT) a main part of the atom?

RESPONSE ATTRIBUTES:

A. Format

Type 1 four numbers corresponding to the illustrations listed vertically in ascending order

Type 2 four terms listed vertically from short to long

B. Options

Type 1 correct response: the number of the line drawing of an atom
distractors: incorrect line drawings of an atom

Type 2 correct response: the term which is (is NOT) a main part of the atom
distractors: terms which are (are not) main parts of the atom

---

SAMPLE ITEM: *Type 1*

2. Which drawing represents the atom?

***A** **B** **C** **D**

SAMPLE ITEM: *Type 2*

2. Which is NOT a main part of the atom?

A nucleus
B proton
C neutron
***D** hydrogen

OBJECTIVE: 3.3

GRADE 8: SCIENCE **GOAL: MATTER AND EARTH MATERIALS**

SKILL: Identify the characteristics of the four states of matter (i.e., solid, liquid, gas and plasma).

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence requiring identification of the characteristics of one of the four states of matter

Type 2 an incomplete sentence requiring identification of a substance in one of the four states of matter

B. Content

Type 1 four states of matter from the skill objective

RESPONSE ATTRIBUTES:

A. Format

Type 1 four phrases or groups of words describing the four states of matter, listed vertically from short to long

Type 2 four terms representing the four states of matter, listed vertically from short to long

B. Options

Type 1 correct response: the phrase or group of words describing the state of matter requested in the stimulus
distractors: phrases or groups of words describing other states of matter

Type 2 correct response: the term requested in the stimulus
distractors: terms representing other states of matter

SAMPLE ITEM: *Type 1*

1. A solid has:

***A** definite shape and volume.
B definite shape, but no definite volume.
C no definite shape, but a definite volume.
D no definite shape and no definite volume.

SAMPLE ITEM: *Type 2*

2. Water has ALL the properties of:

A a gas.
B plasma.
C a solid.
***D** a liquid.

OBJECTIVE: 3.4

GRADE 8: SCIENCE **GOAL: MATTER AND EARTH MATERIALS**

SKILL: Identify the characteristics of sedimentary, igneous and metamorphic rocks.

STIMULUS ATTRIBUTES:

A. Format

Type 1 a direct question such as: Which describes (____) the properties of a ( )?

Type 2 a direct question such as: Which rock is (a sedimentary rock)?

RESPONSE ATTRIBUTES:

A. Format

Type 1 four phrases or groups of words describing properties of rocks, listed vertically from short to long

Type 2 four types of rocks, listed vertically from short to long

B. Options

Type 1 correct response: the phrase or group of words which describes the rock requested in the stimulus
distractors: phrases or groups of words describing other rocks

Type 2 correct response: the name of the rock requested in the stimulus
distractors: names of other rocks

SAMPLE ITEM: *Type 1*

1. **Which describes the properties of metamorphic rock?**

* **A** changed rock
B formed from lava
C formed from magma
D formed from sediment

SAMPLE ITEM: *Type 2*

2. **Which rock is a metamorphic rock?**

* **A** one changed by heat and pressure
B one formed directly from cooled lava
C one formed directly from cooled magma
D one made from sediment that is cemented together

OBJECTIVE: 4.1

GRADE 8: SCIENCE **GOAL: EARTH PROCESSES**

SKILL: Select the definition for the following words and terms: volcano, earthquake, fracture, fold, fault, anticline, syncline, erosion, weathering, glacier, levee, alluvial fan, delta, crust, core, mantle, epicenter and earthquake focus.

STIMULUS ATTRIBUTES:

A. Format

Type 1 a direct question or an incomplete sentence requiring the definition of an underlined term such as: (_____) is the:

Type 2 a direct question or an incomplete sentence with a definition and requiring a term such as: _____ (The center of the earth) is known as the:

B. Content terms and definitions from the objective skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four definitonal phrases, listed vertically from short to long

Type 2 four terms listed vertically from short to long

B. Options

Type 1 correct response: the definition of the stimulus term
distractors: definitions of other scientific terms

Type 2 correct response: the term requested in the stimulus
distractors: other scientific terms

SAMPLE ITEM: *Type 1*

1. Erosion is the:

- **A** wearing away of soils.
  B build-up of soil particles.
  C center material of the earth.
  D amount of moisture in the air.

SAMPLE ITEM: *Type 2*

2. The center of the earth is known as the:

- **A** core.
  B level.
  C crust.
  D mantle.

OBJECTIVE: 4.2

GRADE 8: SCIENCE **GOAL: EARTH PROCESSES**

SKILL: Identify from a group of words the agents of erosion (i.e., wind, ice and water).

STIMULUS ATTRIBUTES:

A. Format a direct question such as: Which is (is NOT) an agent of erosion?

RESPONSE ATTRIBUTES:

A. Format four words or groups of words, listed vertically from short to long

B. Options correct response: the word requested in the stimulus
distractors: other scientific words or groups of words

SAMPLE ITEM:

1. All of the following are agents of erosion EXCEPT:

A ice.
B wind.
C water.
***D** nitrogen.

OBJECTIVE: 5.1

GRADE 8: SCIENCE **GOAL: METEOROLOGY**

SKILL: Select the definition or description for the following terms or words: weather, climate, conduction, convection, radiation, air pressure, fronts, humidity, relative humidity, dew point and inversion.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence containing a definition and requiring a term

Type 2 an incomplete sentence containing an underlined term and requiring a definition

B. Content terms and definitions from the objective skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four terms listed vertically from short to long

Type 2 four definitions listed vertically from short to long

B. Options

Type 1 correct response: the term requested in the stimulus
distractors: other terms from the skill list

Type 2 correct response: the definition requested in the stimulus
distractors: definitions of other terms from the skill list

SAMPLE ITEM: *Type 1*

1. **The amount of moisture in the air is:**

   A climate.
   B a front.
   • **C** humidity.
   D conduction.

SAMPLE ITEM: *Type 2*

2. **Climate is the:**

   A wearing away of soil.
   B amount of moisture in the air.
   C amount of heat in a substance.
   • **D** average temperature and weather conditions.

OBJECTIVE: 5.2

GRADE 8: SCIENCE **GOAL: METEOROLOGY**

SKILL: Identify from a list ways in which instruments may be used to measure weather (i.e., thermometer, barometer, hygrometer, anemometer, wind vane, and radar.)

STIMULUS ATTRIBUTES:

A. Format

Type 1 a direct question or an incomplete sentence containing the use of a weather instrument and asking for the identification for weather instruments

Type 2 a direct question asking for the correct illustration of a weather instrument

Type 3 an incomplete sentence containing the name of a weather instrument and requesting its use for completion.

B. Content weather instruments from the skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four names of weather instruments listed vertically from short to long

Type 2 four illustrations of weather instruments listed vertically

Type 3 four uses of weather instruments, listed vertically from short to long

B. Options

Type 1 correct response: the name of the weather instrument requested in the stimulus
distractors: the names of other weather instruments

Type 2 correct response: the weather instrument requested in the stimulus question

Type 3 correct response: the use for the stimulus weather instrument
distractors: the uses of other weather instruments from the skill list

OBJECTIVE: 5.2 (cont.)

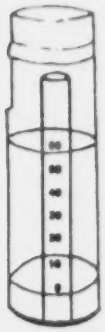
SAMPLE ITEM: ***Type 1***

1. **An instrument which measures the amount of rain which has fallen in a given area is a:**

   A barometer.
   • B rain gauge.
   C wind gauge.
   D hygrometer.

SAMPLE ITEM: ***Type 2***

2. **What is the instrument below?**



   A barometer.
   • B rain gauge.
   C wind gauge.
   D hygrometer.

SAMPLE ITEM: ***Type 3***

3. **A rain gauge measures the:**

   A air pressure.
   B velocity of the wind.
   C amount of moisture in the air.
   • D amount of rain which has fallen in a given area.

OBJECTIVE: 5.6

GRADE 8: SCIENCE **GOAL: METEOROLOGY**

SKILL: Select the names, rank by proportion and indicate the use of the major gases in the atmosphere (i.e., nitrogen, oxygen, carbon dioxide and water vapor).

STIMULUS ATTRIBUTES:

A. Format

Type 1 a statement asking the student to select the correct proportional sequence of atmospheric gases

Type 2 a direct question or an incomplete sentence asking the student to select the correct use of an atmospheric gas

RESPONSE ATTRIBUTES:

A. Format

Type 1 four sets of words, each containing the names of three atmospheric gases, listed vertically from short to long

Type 2 four words or groups of words listed vertically from short to long

B. Options

Type 1 correct response: the set of words requested in the stimulus
distractors: other sets of words

Type 2 correct response: the word requested in the stimulus
distractors: other words related to the correct response

SAMPLE ITEM: *Type 1*

1. **Which contains the atmospheric gases listed in CORRECT proportional order?**

   A hydrogen, nitrogen, oxygen
   B hydrogen, oxygen, nitrogen
   *C nitrogen, oxygen, carbon dioxide
   D nitrogen, carbon dioxide, oxygen

SAMPLE ITEM: *Type 2*

2. Carbon dioxide is MOST useful for:

   A burning.
   B respiration.
   C transpiration.
   * D photosynthesis.

OBJECTIVE: 6.1

GRADE 8: SCIENCE **GOAL: OCEANOGRAPHY AND WATER CYCLE**

SKILL: Select the definition for the following words and terms: trench, rift valley and mid-ocean ridge.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence with an underlined word requiring identification or a definition

Type 2 an incomplete sentence containing a definition and requiring identification of a term

B. Content definitions and terms from the skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four definitions listed vertically from short to long

Type 2 four terms listed vertically from short to long

B. Options

Type 1 correct response: the definition requested in the stimulus
distractors: definitions of related words

Type 2 correct response: the term requested in the stimulus
distractors: other related terms

SAMPLE ITEM: *Type 1*

1. **A rift valley is a block of:**

   A earth which sinks under two vertical faults.
   B core which sinks between two vertical faults.
   *C crust which sinks between two vertical faults.
   D earth which sinks as a result of pressure from two vertical faults.

SAMPLE ITEM: *Type 2*

2. **The block of crust which sinks between two vertical faults is a(n):**

   A trench.
   *B rift valley.
   C ocean valley.
   D mid-ocean ridge.

OBJECTIVE: 6.2

GRADE 8: SCIENCE **GOAL: OCEANOGRAPHY AND WATER CYCLE**

SKILL: Identify and sequence the events in the water cycle.

STIMULUS ATTRIBUTES:

A. Format

Type 1 a statement asking for the correct sequence of events in a water cycle

Type 2 a sentence identifying the events in the water cycle and requiring labeling of that cycle

RESPONSE ATTRIBUTES:

A. Format

Type 1 four sets of words or terms describing events in the water cycle listed vertically from short to long

Type 2 four words or terms listed vertically from short to long

B. Options

Type 1 correct response: the set of words or terms requested in the stimulus
distractors: other sets of words or terms

Type 2 correct response: the word or term requested in the stimulus
distractors: other words or terms

SAMPLE ITEM: *Type 1*

1. **Which step in the water cycle involves a gas changing to a liquid?**

   A evaporation
   • **B** condensation
   C acceleration
   D precipitation

SAMPLE ITEM: *Type 2*

1. **Which cycle involves condensation, evaporation and precipitation?**

   A rock cycle
   • **B** water cycle
   C nitrogen cycle
   D oxygen-carbon dioxide cycle

OBJECTIVE: 7.1

GRADE 8: SCIENCE **GOAL: UNIVERSE/ASTRONOMY**

SKILL: Select the definition or description for the following words and terms: constellations, astronomy, light year, solar system, gravity, rotation, revolution and Newton's Laws of Motion.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence with an underlined word requiring the identification of a definition

Type 2 an incomplete sentence with a definition requiring identification of a word or term

B. Content definitions and terms from the skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four definitions listed vertically from short to long

Type 2 four words or terms listed vertically from short to long

B. Options

Type 1 correct response: the definition requested in the stimulus
distractors: definitions of other related words or terms

Type 2 correct response: the word or term requested in the stimulus
distractors: other related words or terms

SAMPLE ITEM: *Type 1*

1. Gravity is:

*A the pull of the earth.
B the attraction of positive charges.
C the attraction of negative charges.
D anything that has weight and takes up space.

SAMPLE ITEM: *Type 2*

2. The pull of the earth is known as:

* A gravity.
B latitude.
C rotation.
D astronomy.

OBJECTIVE: 7.4

GRADE 8: SCIENCE **GOAL: UNIVERSE/ASTRONOMY**

SKILL: Recognize from a list the planets in order of distance from the sun.

STIMULUS ATTRIBUTES:

A. Format

Type 1 a direct question requiring the student to identify the plants in the CORRECT order from the sun

Type 2 a direct question such as: Which planet is ( ) (CLOSEST, FARTHEST) from the sun?

RESPONSE ATTRIBUTES:

A. Format

Type 1 four lists of four to six planets listed vertically from short to long

Type 2 the names of four planets, listed vertically from short to long

B. Options

Type 1 correct response: the list of planets requested in the stimulus
distractors: lists of planets in different order

Type 2 correct response: the name of the planet requested in the stimulus question
distractors: the names of other planets

SAMPLE ITEM: *Type 1*

1. **Which list represents the CORRECT order of planets from the sun?**

   A Mercury, Earth, Venus, Mars
   • B Earth, Mars, Jupiter, Saturn
   C Earth, Mars, Saturn, Jupiter
   D Venus, Mars, Saturn, Jupiter

SAMPLE ITEM: *Type 2*

1. **Which planet is CLOSEST to the sun?**

   A Mars
   • B Earth
   C Saturn
   D Jupiter

OBJECTIVE: 8.1

GRADE 8: SCIENCE **GOAL: ENERGY AND NATURAL RESOURCES**

SKILL: Select statements which correctly define or identify the following terms: environment, ecology, erosion, natural resources, renewable resources, pollution, pollutants, smog, hydrocarbons, nonrenewable resources, fossil fuels, conservation, geothermal, solar energy, nuclear energy, fission and fusion.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence with an underlined word or term requiring identification of the correct definition

Type 2 an incomplete sentence with a definition and requiring the identification of a word or term

B. Content definitions and terms from the skill list

RESPONSE ATTRIBUTES:

A. Format

Type 1 four definitions listed vertically from short to long

Type 2 four words or terms listed vertically from short to long

B. Options

Type 1 correct response: the definition requested in the stimulus
distractors: definitions of other related terms from the skill list

Type 2 correct response: the word or term requested in the stimulus
distractors: other related words or terms from the skill list

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SAMPLE ITEM: *Type 1*

1. **Ecology is the study of:**

   A man and animals.
   B soil and its relationship to man.
   C water and its relationship to man.
   * D the environment and its relationships.

SAMPLE ITEM: *Type 2*

2. **A mixture of smoke, fog and other air pollutants is:**

   * A smog.
   B fission.
   C erosion.
   D ecology.

OBJECTIVE: 8.2

GRADE 8: SCIENCE **GOAL: ENERGY AND NATURAL RESOURCES**

SKILL: Identify statements which classify natural resources as renewable or nonrenewable.

STIMULUS ATTRIBUTES:

A. Format

Type 1 an incomplete sentence or a direct question such as: Which is (is NOT) a characteristic of a renewable resource?

Type 2 a direct question such as: Which can (CANNOT) be classified as a renewable resource?

RESPONSE ATTRIBUTES:

A. Format

Type 1 four sentences or four phrases listed vertically from short to long

Type 2 four words or phrases listed vertically from short to long

B. Options

Type 1 correct response: the sentence or phrase requested in the stimulus
distractors: other related sentences or phrases

Type 2 correct response: the word or phrase requested in the stimulus
distractors: other related words or phrases

SAMPLE ITEM: *Type 1*

1. **Which is a characteristic of a nonrenewable resource?**

   • **A** It cannot be replaced in a short period of time.
   B It can not be grown in a short period of time.
   C It cannot be composed of organic material.
   D It can be replaced in a short period of time.

SAMPLE ITEM: *Type 2*

2. **Which CANNOT be classified as a renewable resource?**

   A trees
   B water
   C metals
   •**D** fossil fuel

END

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